Paper No. 45

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte SEIICHI KONDO, YASUO WADA, TSUYOSHI UDA, TOKUO KURE, TSUNEO ICHIGUCHI, SHINJI OKAZAKI and YOSHIMASA MURAYAMA

Appeal No. 2001-1193
Application No. 08/463,761

HEARD: July 11, 2002

Before KRASS, BARRETT and LALL, Administrative Patent Judges.
LALL, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the Examiner's final rejection of claims 1-3, 13-24, and 27-51. Claims 5-12 have been non-elected and claims 4, 25 and 26 have been canceled.

The disclosed invention is directed to a superfine electronic device constructed with atomic fine lines. The following claim is illustrative of the invention.

1. An atomic fine line pn junction element comprising:

an atomic fine line arranged on one or a plurality of straight lines, in a ring shape or on a curve; and

respective elements disposed in a proximity of and spaced apart from said atomic fine line for supplying electrons and holes thereto.

There is no art rejection in this case.

Claims 1-3, 13-24, and 27-51 stand rejected under 35 U.S.C. § 112 first paragraph for lack of enablement.

Rather than repeat the argument of Appellants and the Examiner, we make reference to the brief (Paper No. 35), reply brief (Paper No. 39) and the Examiner's answer (Paper No. 36) for respective details thereof.

OPINION

We have considered the rejections advanced by the Examiner and the supporting arguments. We have, likewise, reviewed the Appellants' arguments set forth in the briefs.

We reverse.

The Examiner has failed to set forth a prima facie case for the rejection which is entirely based on the lack of enablement.

An analysis of whether the claims under appeal are supported by an enabling disclosure requires a determination of whether that disclosure contained sufficient information regarding the

subject matter of the appealed claims as to enable one skilled in the pertinent art to make and use the claimed invention. The test for enablement is whether one skilled in the art could make and use the claimed invention from the disclosure coupled with information known in the art without undue experimentation. See United States v. Telectronics, Inc., 857 F.2d 778, 785, 8 USPQ2d 1217, 1223 (Fed. Cir. 1988); In re Stephens, 529 F.2d 1343, 1345, 188 USPQ 659, 661 (CCPA 1976).

In order to make a rejection, the Examiner has the initial burden to establish a reasonable basis to question the enablement provided for the claimed invention. See In re Wright, 999 F.2d 1557, 1561-62, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993) (examiner must provide a reasonable explanation as to why the scope of protection provided by a claim is not adequately enabled by the disclosure). A disclosure which contains a teaching of the manner and process of making and using an invention in terms which correspond in scope to those used in describing and defining the subject matter sought to be patented must be taken as being in compliance with the enablement requirement of 35 U.S.C. § 112, first paragraph, unless there is a reason to doubt the objective truth of the statements contained therein which must be relied on for enabling support.

Assuming that sufficient reason for such doubt exists, a rejection for failure to teach how to make and/or use will be proper on that basis. See In re Marzocchi, 439 F.2d 220, 223, 169 USPQ 367, 369 (CCPA 1971). As stated by the court,

> it is incumbent upon the Patent Office, whenever a rejection on this basis is made, to explain why it doubts the truth or accuracy of any statement in a supporting disclosure and to back up assertions of its own with acceptable evidence or reasoning which is inconsistent with the contested statement. Otherwise, there would be no need for the applicant to go to the trouble and expense of supporting his presumptively accurate disclosure.

Id. at 224, 169 USPQ at 370.

Once the Examiner has established a reasonable basis to question the enablement provided for the claimed invention, the burden falls on Appellant to present persuasive arguments, supported by suitable proofs where necessary, that one skilled in the art would be able to make and use the claimed invention using the disclosure as a guide. See In re Brandstadter, 484 F.2d 1395, 1406, 179 USPQ 286, 294 (CCPA 1973). In making the determination of enablement, the Examiner shall consider the original disclosure and all evidence in the record, weighing

evidence that supports enablement[1] against evidence that the specification is not enabling.

Thus, the dispositive issue is whether the Appellants' disclosure, considering the level of ordinary skill in the art as of the date of Appellants' application, would have enabled a person of such skill to make and use the Appellants' invention without undue experimentation. The threshold step in resolving this issue as set forth supra is to determine whether the Examiner has met his burden of proof by advancing acceptable reasoning consistent with enablement. This the Examiner has not done.

In an effort to establish a prima facie case for lack of enablement for the claims on appeal, the Examiner asserts (answer at page 4 and 5):

> Eigler et al in Nature 4/90 shows a line of xenon atoms on a nickel surface, and states in the last paragraph "We anticipate that there will be a limiting class of adsorbed atoms and molecules that may be positioned by this method". In other words, it would be nice to be able to position any atom

[1] The appellant may attempt to overcome the examiner's doubt about enablement by pointing to details in the disclosure but may not add new matter. The appellant may also submit factual affidavits under 37 CFR § 1.132 or cite references to show what one skilled in the art knew at the time of filing the application.

> anywhere on any surface, however, the mechanics and enablement of such structures is not obvious. Furthermore the elementary structure shown by Eigler is not a functioning pn junction device. Hashizume et al in Applied Surface Science '92, Jeon et al Physical Review letters '92, Aruga et al '84, and Hashizume et al '91, all of record, show atomically manipulated alkali metal atoms on a surface of silicon. These structures also are not functional pn junction devices, but merely lines of alkai atoms on a silicon surface. Hashizume '96, of record, shows a line of Ga metal atoms on a substrate of hydrogen passivated silicon, but again, this is no functioning pn junction device, and at most is merely a line or "wire" of metal gallium atoms.
>
> In summation, there is no enablement for a functioning pn junction device. Appellant's disclosure is at best a hypothetical description of atomically manipulating several species of atoms in precise spatial relationship to form hypothetical pn junction devices. There is no proof that appellant had in his possession the manufacturing capability of making these atomic pn junction structures, nor is there any proof that appellant has actually made these devices, such as electron micrographs of finished devices and Current vs. Voltage measurements proving pn junction behavior.

Appellants cite (brief at page 15) In re Chilowsky, 229 F.2d 457, 462, 108 USPQ 321, 325 (CCPA 1956) and quote that "the mere fact that something is (sic, has) not previously been done clearly is not, in itself, sufficient basis for rejecting all applications supporting to disclose how to do it." Appellants have also filed four declarations by Dr. Tomihiro Hashizume (Paper No. 5, filed on May 9, 1996, Paper No. 14, filed on September 5, 1997, Paper No. 20, filed on August 4, 1998, and Paper No. 26, filed on February 9, 1999)

showing the actual photographs and the measurements of a device made using the Appellants' disclosure in an effort to prove that such a device was indeed enabled to an artisan, the declarant being such a person.

In response to the argument based on In re Chilowsky, the Examiner asserts (answer at page 7) that "this is not the case with atomic fine line pn junction devices which have not yet been built and demonstrated to work as pn junction devices." Furthermore, the Examiner has presented his analysis of the declarations at pages 7, 8, 9 and 10 of the Examiner's answer and concludes (answer at page 10):

> the declarant's assertions that the claimed devices will indeed operate as pn junction devices is again not proven and accordingly not persuasive. Appellant's arguments that metals can operate like bulk semi-conductors devices in accordance with the teachings of the application are also not probative of pn junction diode behavior. Where are the convincing current vs voltage measurements? Band diagrams are not probative.

Appellants respond to the Examiner's objections regarding the four declarations at pages 3-7 of the reply brief. Appellants contend that, in the declarant's laboratory test device, a gallium fine line would work as a pn junction device in accordance with Appellants' disclosure, notwithstanding the fact that only a single metal, gallium,

was involved (it works because the two different valence electronic states for the metal), and that hydrogen terminated silicon was used instead of the disclosed silicon dioxide because the two are well recognized equivalents (reply brief at page 4).

Comparing the arguments of Appellants and the Examiner, we are persuaded by Appellants' assertions, largely based on the actual results obtained by the declarant by making a device made according to the disclosure of Appellants. On the other hand, the Examiner has presented no factual evidence to contest the actual measurements which are presented by the declarant, and is indulging only in sheer speculation based on the literature, especially the Eigler article published in Nature (answer at page 4). Keeping in mind the absence of any facilities in the United States Patent and Trademark Office to test out any device, we are constrained to give full faith and credit to the declarations and the statements made therein by the declarant that the device tested in the declarant's laboratory was made according to the disclosure of Appellants, and that the laboratory results are indeed the actual results. We have no means to contest or verify such experimental results.

Therefore, we do not sustain the rejection of claims 1-3, 13-24, and 27-51 under 35 U.S.C. § 112 first paragraph for lack of enablement.

The Examiner's decision under 35 U.S.C. § 112 first paragraph for lack of enablement is reversed.

REVERSED

ERROL A. KRASS Administrative Patent Judge	)
LEE E. BARRETT Administrative Patent Judge	) BOARD OF PATENT APPEALS AND INTERFERENCES
PARSHOTAM S. LALL Administrative Patent Judge	)

PSL/jrg

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